

A 2N-1 CHROMOSOMAL CHIMERA IN MAIZE

BARBARA McCLINTOCK
Botany Department, Cornell University

WHILE investigating the chromosome numbers in an F_2 generation of a cross of triploid maize (*Zea mays*) by diploid maize, an individual appeared whose microsporocytes showed a $2n-1$ chromosome complement. The diploid chromosome number in maize is 20. Sporocytes of such plants normally show 10 bivalents at metaphase of the first meiotic division.

The presence of sporocytes showing only nine bivalents and one univalent (see Figure 20) in the first aceto-carminic smears led to a further investigation of the chromosome complement in other parts of the tassel. The plant was very small and the tassel poorly developed, but approximately 150 clear figures were obtained from several different regions of the tassel. In all cases the sporocytes showed clearly 19 chromosomes, usually in the form of nine bivalents and one univalent.

In anaphase the components of the nine bivalents disjoined and passed regularly to the two poles. The univalent usually lagged at the equator after the bivalents had disjoined, or lagged and split, the halves very frequently being eliminated from the reorganizing telophase nuclei.

Several root tips were examined and all clear figures showed 20 chromosomes.

Such evidence points to the fact that early in the ontogeny of the upper part of this plant a chromosome must have been lost. Such occurrences are probably not rare, but their detection is, since there are so few cases mentioned in the literature*. Unfortunately, for some undetermined reason, the plant gradually died before maturing pollen.

*BLAKESLEE, A. F., and BELLING, J. Chromosomal chimeras in the Jimson weed. *Science*, 55:19-20.



LACKING A CHROMOSOME

Figure 20

Photomicrograph from an eight months' old permanently mounted aceto-carminic smear showing a late metaphase figure with nine bivalents and one univalent. Made with the aid of a Leitz "Makam" camera, a periplanatic ocular, 1.8 mm. N. A. 1.25 Spencer achromatic objective, and a Wratten green filter No. 56. Magnification approximately $650\times$.